



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,362	08/19/2003	Mark Christofis	46107-0089	4809

7590

11/07/2005

Douglas A. Mullen  
Dickinson Wright PLLC  
Suite 800  
1901 L Street N.W.  
Washington, DC 20036

EXAMINER
----------

YEE, DEBORAH

ART UNIT	PAPER NUMBER
----------	--------------

1742

DATE MAILED: 11/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/643,362	CHRISTOFIS ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Deborah Yee	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 August 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 25-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8-19-03</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I in the reply filed on 8-31-05 is acknowledged. The traversal is on the ground(s) that the invention of group I is not a patentably separate and distinct invention from group II. It was submitted that group II product claims 25 to 32 recite "the hardened case is formed by an induction heat treatment" as described in group I, process claims 1 to 24; hence the product claims can not be made by a process other than that described in claims 1 to 24. This is not found persuasive because even though product claims recite process limitations, it does not mean that product can only be made by that process, as evident by applicant's claim 25 which recites induction heat treatment in general. In any event, it is the examiner's position that group I product claims 25 to 32 can be made by a different hardening process such as heating surface with laser or plasma beam and then cooling.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 25 to 35 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

***Specification***

3. The disclosure is objected to because of the following informalities: Page 6, paragraph 23 refers to Figures 1-3 with reference numbers 27 and 28 yet these reference numbers are not disclosed in Figures 1 -3.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 6 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The recitation "Rzeppa-type constant velocity joint" is indefinite. Note that the addition of the word "type" to an otherwise define expression is held to be infinite because it is unclear hat "type" was intended to convey, see MPEP 2173.05©.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 to 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bober (US patent 3,944,446) in view of Yoshida et al (US Patent 6,390,924).

9. Similar to the present invention, Bober in claims 1 to 4 of column 6 discloses a method of induction heat treatment comprising the steps of selecting steel article (such as elongated cam shaft) having a longitudinal axis of rotation and an outer surface having an upper section, a lateral section and a lower section, and comprising a plurality of points having a plurality of normal spacings from the axis of rotation; selecting an cylindrical multi-turn inductor; placing and rotating said article within the induction coil at a given longitudinal axis; and energizing said inductor at high frequency to apply non-planar magnetic field and produce induction currents within the outer surface of the article for a time sufficient to induce heating of the outer surface to a heat treatment temperature to at least a selected case depth, and cooling the outer surface.

10. Bober teaches a using a cylindrical multi-turn inductor which would suggest the semi-cylindrical lateral, lower and upper coil recited by claim 1.

Art Unit: 1742

11. Bober on lines 20 to 24 of column 2 discloses a high frequency range of 3 to 10Kc which appear overlap with 7.5 to 12 kHz recited by claim 15. Moreover, the degree of high frequency would be a matter of choice well within the skill of the artisan and productive of new and unexpected results.

12. Bober on lines 5 to 25 of column 2 discloses inductive heating and quench hardening bearing surfaces and cam surfaces on a camshaft which would include inner ball race as recited by one or more of the claims, since a bearing comprises an inner and outer race.

13. Although Bober does not specifically teach heating to austenitic temperature and cooling martensitic temperature, such would not be a patentable difference since these are the conventional temperatures for surface hardening steel, as evident by Yoshida on lines 18 to 30 of column 11; and hence would be obvious to incorporate into the Bober process. Moreover, the hardness HRC on surface and core, and depth of case hardening as recited by one or more of the dependent claims would be a matter of choice and routine optimization well within the skill of the artisan and productive of no new and unexpected results.

14. Bober induction hardening process is a general process which would encompass pearlite/ferrite steel or AISI 1050 steel recited by one or more of the dependent claims. See Yoshida, lines 25 to 29 and 45 to 50 in column 12 wherein ferrite-pearlite steels and low-carbon steels are commonly use to make transmission shafts.


15. The unapplied references have been cited to further depict the state of the art in induction hardening steel.

Art Unit: 1742

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on Monday-Friday from 6:00 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Deborah Yee  
Primary Examiner  
Art Unit 1742

dy